

**AVAILABLE COPY**Application Serial No.: 10/004,363  
Amendment and Response to May 5, 2004 Office Action**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A method comprising:  
acquiring first three-dimensional surface data representing at least a portion of a patient's body while the patient is in a first position substantially maintained during a computed tomography scan;  
acquiring second data independent from the first data and representing at least one internal three-dimensional portion of the patient's body while the patient is in the first position;  
acquiring third three-dimensional surface data representing at least the portion of the patient's body while the patient is in a second position substantially maintained in preparation for radiation treatment; and  
comparing the first position and the second position based on the first data and the third data.
2. (Original) A method according to Claim 1, further comprising:  
determining a radiation treatment plan based on the first data, the second data, and on data representing a physical layout of a radiation treatment station.
3. (Original) A method according to Claim 2, wherein the step of determining the radiation treatment plan comprises:  
determining a position of a radiation treatment device that will avoid the patient's body and that will allow irradiation of a portion of the at least one internal portion.
4. (Cancelled)
5. (Previously amended) A method according to Claim 1, further comprising:  
determining, based on the first data and the third data, that the second position does not correspond to the first position.

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6. (Original) A method according to Claim 5, further comprising:  
instructing the patient to move so that the second position corresponds to the first position.
7. (Original) A method according to Claim 5, further comprising:  
changing a radiation treatment plan for the patient based on a difference between the first position and the second position.
8. (Original) A method according to Claim 1, further comprising:  
determining, based on the first data and the third data, that the patient represented by the first data is different from the patient represented by the third data.
9. (Previously amended) A method according to Claim 1, further comprising:  
determining, based on the first data and the third data, that the patient's body has changed by greater than a threshold amount; and  
in response to the determination that the patient's body has changed by greater than the threshold amount, acquiring fourth three-dimensional surface data representing at least the portion of the patient's body while the patient is in a third position substantially maintained during a second computed tomography scan.
10. (Previously amended) A method according to Claim 1, further comprising:  
acquiring fourth three-dimensional surface data representing at least the portion of the patient's body while the patient is in a third position; and  
activating a radiation beam according to a radiation treatment plan if it is determined based on the fourth data that the third position corresponds to a point in a cycle of body motion specified by the treatment plan.
11. (Previously amended) A method according to Claim 10, further comprising:  
acquiring fifth three-dimensional surface data representing at least the portion of the patient's body while the patient is in a fourth position; and

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deactivating the radiation beam according to a radiation treatment plan if it is determined based on the fifth data that the fourth position does not correspond to the point specified by the treatment plan.

12. (Currently amended) A method comprising:  
acquiring computed tomography data of a patient while the patient remains substantially in a first position;  
acquiring first three-dimensional surface data of the patient independent from the computed tomography data while the patient remains substantially in the first position;  
determining a radiation treatment plan based on the computed tomography data, the three-dimensional data, and data representing a physical layout of a radiation treatment station;  
acquiring second three-dimensional surface data of the patient while the patient remains substantially in a second position at the radiation treatment station;  
determining if the second three-dimensional data corresponds to the first three-dimensional data; and  
delivering radiation to the patient according to the radiation treatment plan if it is determined that the second three-dimensional data corresponds to the first three-dimensional data.

13. (Currently amended) A system comprising:  
a computed tomography scanning device for acquiring computed tomography data of a patient while the patient is in a scanning position;  
a first surface photogrammetry device for acquiring first three-dimensional surface data independent from the computed tomography data of at least a portion of the patient's body while the patient is in the scanning position;  
a radiation treatment device for delivering radiation to the patient;  
a second surface photogrammetry device for acquiring second three-dimensional surface data of at least the portion of the patient's body while the patient is in a treatment position on the radiation treatment device; and  
a controller for determining if the treatment position corresponds to the scanning position based on the first three-dimensional surface data and the second three-dimensional surface data.

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14. (Original) A system according to Claim 13, further comprising:  
a treatment planning device for generating a radiation treatment plan based on the computed tomography data, the first three-dimensional surface data, and data representing a physical layout of a radiation treatment station.

15. (Cancelled)

16. (Previously amended) A system according to Claim 13, wherein the first surface photogrammetry device and the second surface photogrammetry device are a same device.

17. (Currently amended) A medium storing controller-executable process steps, the process steps comprising:

a step to acquire first three-dimensional surface representing at least a portion of a patient's body while the patient is in a first position substantially maintained during a computed tomography scan;

a step to acquire second data independent from the first data representing at least one internal three-dimensional portion of the patient's body while the patient is in the first position;

a step to acquire third three-dimensional surface data representing at least the portion of the patient's body while the patient is in a second position substantially maintained in preparation for radiation treatment; and

a step to compare the first position and the second position based on the first data and the third data.

18. (Original) A medium according to Claim 17, the process steps further comprising:  
a step to determine a radiation treatment plan based on the first data, the second data, and data representing a physical layout of a radiation treatment station.

19. (Cancelled)

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20. (Previously amended) A medium according to Claim 17, the process steps further comprising:

a step to determine, based on the first data and the third data, that the patient's body has changed by greater than a threshold amount; and

a step to acquire, in response to the determination that the patient's body has changed by greater than the threshold amount, fourth three-dimensional surface data representing at least the portion of the patient's body while the patient is in a third position substantially maintained during a second computed tomography scan.

21. (Previously amended) A medium according to Claim 17, the process steps further comprising:

a step to acquire fourth three-dimensional surface data representing at least the portion of the patient's body while the patient is in a third position; and

a step to activate a radiation beam according to a radiation treatment plan if it is determined, based on the fourth data, that the third position corresponds to a position specified by the treatment plan.

22. (Previously amended) A medium according to Claim 17, the process steps further comprising:

a step to acquire fourth three-dimensional surface data representing at least the portion of the patient's body while the patient is in a third position; and

a step to activate a radiation beam according to a radiation treatment plan if it is determined based on the fourth data that the third position corresponds to a point in a cycle of body motion specified by the treatment plan.

23. (Previously amended) A medium according to Claim 22, the process steps further comprising:

a step to acquire fifth three-dimensional surface data representing at least the portion of the patient's body while the patient is in a fourth position; and

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a step to deactivate the radiation beam according to a radiation treatment plan if it is determined based on the fifth data that the fourth position does not correspond to the point specified by the treatment plan.

24. (newly added) A method according to Claim 1, further comprising:  
converting the first surface data to a computed tomography scanner coordinate frame;  
determining a patient isocenter based on the second data; and  
converting the converted first surface data to a coordinate frame of the patient isocenter.

25. (newly added) A method according to Claim 24, further comprising:  
converting the third surface data to a coordinate frame of a radiation treatment device;  
and  
comparing the converted third surface data to the first surface data that was converted to a coordinate frame of the patient isocenter.

26. (newly added) A method according to Claim 12, further comprising:  
converting the first surface data to a computed tomography scanner coordinate frame;  
determining a patient isocenter based on the computed tomography data; and  
converting the converted first surface data to a coordinate frame of the patient isocenter.

27. (newly added) A method according to Claim 26, wherein the step of determining if the second three-dimensional surface data corresponds to the first three-dimensional surface data comprises:

converting the second surface data to a coordinate frame of the radiation treatment station; and

comparing the converted second surface data to the first surface data that was converted to a coordinate frame of the patient isocenter.

28. (newly added) A medium according to Claim 17, the process steps further comprising:

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a step to convert the first surface data to a computed tomography scanner coordinate frame;

a step to determine a patient isocenter based on the second data; and

a step to convert the converted first surface data to a coordinate frame of the patient isocenter.

29. (newly added) A medium according to Claim 24, further comprising:

a step to convert the third surface data to a coordinate frame of a radiation treatment device; and

a step to compare the converted third surface data to the first surface data that was converted to a coordinate frame of the patient isocenter.

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